

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1           Claim 1   (Currently amended):   A method of  
2   manufacturing a cylinder head for a small engine  
3   comprising the steps of  
4           casting a cylinder head having an as-cast cylinder  
5   chamber defined by a cylinder wall, an as-cast spark plug  
6   aperture communicating with one end of said cylinder  
7   chamber, cooling fins, an exhaust port extending from the  
8   cylinder chamber to a first face on an exhaust post  
9   flange, an intake port extending from said cylinder  
10   chamber to a second face on an intake port flange,  
11   fastener openings in said first and second faces, a foot  
12   flange having an as-cast mounting surface at another end  
13   of said cylinder chamber, and having as-cast fastening  
14   ~~apertures~~ openings in said foot flange, wherein said as-  
15   cast spark-plug aperture is closed at one end by a thin  
16   web;  
17           machining said cylinder wall to a predetermined  
18   tolerance;  
19           removing said thin web that closes one end of said  
20   as-cast spark-plug aperture; and  
21           tapping said spark plug aperture.

Claim 2 (Canceled)

1           Claim 3 (Currently amended): A method of  
2     manufacturing a cylinder head ~~according to claim 1, for a~~  
3     small engine comprising the steps of  
4           casting a cylinder head having an as-cast cylinder  
5     chamber defined by a cylinder wall, an as-cast spark plug  
6     aperture communicating with one end of said cylinder  
7     chamber, cooling fins, an exhaust port extending from the  
8     cylinder chamber to a first face on an exhaust port  
9     flange, an intake port extending from said cylinder  
10    chamber to a second face on an intake port flange,  
11    fastener openings in said first and second faces, a foot  
12    flange having an as-cast mounting surface at another end  
13    of said cylinder chamber, and having as-cast fastening  
14    openings in said foot flange, wherein said exhaust port  
15    aperture and said intake aperture are closed by thin webs  
16    forming portions of said as-cast cylinder chambers;  
17           machining said cylinder wall to a predetermined  
18    tolerance;  
19           ~~and wherein said thin webs are removed removing said~~  
20    thin webs when said cylinder wall is machined; and  
21           tapping said spark plug aperture.

1           Claim 4 (Original): A method of manufacturing a

2 cylinder head according to claim 1, wherein the flatness  
3 of the as-cast mounting surface of said foot flange is  
4 0.006 inch over its entire surface.

1 Claim 5 (Original): A method of manufacturing a  
2 cylinder head according to claim 1, wherein said as-cast  
3 fastening openings in said foot flange are cast to a  
4 perpendicularity of 0.002 inch with respect to the foot  
5 flange mounting surface.

1 Claim 6 (Original): A method of manufacturing a  
2 cylinder head according to claim 1, wherein said as-cast  
3 fastening openings in said foot flange are cast to within  
4 0.006 inch of a true positional location on said foot  
5 flange.

1 Claim 7 (Currently amended): A method of  
2 manufacturing a cylinder head for a small engine  
3 comprising the steps of  
4 casting a cylinder head having an as-cast cylinder  
5 chamber defined by a cylinder wall, an as-cast spark plug  
6 aperture communicating with one end of said cylinder  
7 chamber, cooling fins, an exhaust port extending from the  
8 cylinder chamber to a first face on an exhaust post  
9 flange, an intake port extending from said cylinder

10 chamber to a second face on an intake port flange,  
11 fastener openings in said first and second faces, a foot  
12 flange having an as-cast mounting surface at another end  
13 of said cylinder chamber, and having as-cast fastening  
14 openings in said foot flange, said as-cast fastening  
15 openings in said foot flange being cast within 0.006 inch  
16 of a true positional location on said foot flange and  
17 being cast to a perpendicularity of 0.002 inch with  
18 respect to the foot flange mounting surface, said as-cast  
19 mounting surface of said foot flange being 0.006 inch  
20 over its entire surface, wherein said as-cast spark-plug  
21 aperture is closed at one end by a thin web;

22 boring said cylinder wall to a predetermined  
23 tolerance;

24 removing said thin web that closes one end of said  
25 as-cast spark-plug aperture; and

26 tapping said spark plug aperture.

Claim 8 (Canceled)

1 Claim 9 (Currently amended): A method of  
2 manufacturing a cylinder head ~~according to claim 7,~~ for a  
3 small engine comprising the steps of  
4 casting a cylinder head having an as-cast cylinder  
5 chamber defined by a cylinder wall, an as-cast spark plug

6      aperture communicating with one end of said cylinder  
7      chamber, cooling fins, an exhaust port extending from the  
8      cylinder chamber to a first face on an exhaust port  
9      flange, an intake port extending from said cylinder  
10     chamber to a second face on an intake port flange,  
11     fastener openings in said first and second faces, a foot  
12     flange having an as-cast mounting surface at another end  
13     of said cylinder chamber, and having as-cast fastening  
14     openings in said foot flange, said as-cast fastening  
15     openings in said foot flange being cast within 0.006 inch  
16     of a true positional location on said foot flange and  
17     being cast to a perpendicularity of 0.002 inch with  
18     respect to the foot flange mounting surface, said as-cast  
19     mounting surface of said foot flange being 0.006 inch  
20     over its entire surface; wherein said exhaust port  
21     aperture and said intake aperture are closed by thin webs  
22     forming portions of said as-cast cylinder chambers;  
23     boring said cylinder wall to a predetermined  
24     tolerance;  
25     ~~and wherein said thin webs are removed removing said~~  
26     ~~thin webs~~ when said cylinder wall is machined; ~~and~~  
27     ~~tapping said spark plug aperture.~~

1            Claim 10 (Original): A method of manufacturing a  
2            cylinder head according to claim 1, wherein apertures are

3 cast in said fins, said apertures being axially aligned  
4 with the fastening apertures in said foot flange.

1 Claim 11 (Original): A method of manufacturing a  
2 cylinder head according to claim 1, wherein apertures are  
3 machined in said fins, said apertures being axially  
4 aligned with the fastening apertures in said foot flange.

Claims 12-16 (Canceled)

1 Claim 17 (Withdrawn): A method of manufacturing a  
2 crankcase for a small engine comprising the steps of  
3 casting a crankcase having a crankcase chamber, first and  
4 second bearing recess at an end of said crankcase  
5 chamber, each recess being defined by a cylindrical  
6 sidewall having a plurality of rounded radially inwardly  
7 directed flutes formed thereon, and pressing a roller  
8 bearing into each recess.

1 Claim 18 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 17, wherein the flutes are  
3 evenly spaced about the cylindrical sidewalls and are  
4 separated by arcuate sidewall portions.

1 Claim 19 (Withdrawn): A method of manufacturing a

2 crankcase according to claim 18, wherein the flutes in  
3 said first bearing recess are offset an arcuate distance  
4 with respect to the flutes in said second bearing recess.

1 Claim 20 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 19, wherein said arcuate  
3 distance corresponds to said arcuate dimension.

1 Claim 21 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 20, wherein the number of  
3 balls in said ball bearing do not equal the number of  
4 flutes in a bearing recess.

1 Claim 22 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 20, wherein the number of  
3 balls in said ball bearing are greater than the number of  
4 flutes in a bearing recess.

1 Claim 23 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 20, wherein there are eight  
3 balls in a ball bearing and seven flutes in a bearing  
4 recess.

1 Claim 24 (Withdrawn): A method of manufacturing a  
2 crankcase according to claim 17, wherein each roller

3 bearing is pressed into each recess until it seats on  
4 said toroidal base.

1 Claim 25 (Currently amended): A method of  
2 manufacturing a cylinder head for a small engine  
3 comprising the steps of

4 casting a cylinder head having an as-cast cylinder  
5 chamber defined by a cylinder wall, an as-cast spark plug  
6 aperture communicating with one end of said cylinder  
7 chamber, cooling fins, an exhaust port extending from the  
8 cylinder chamber to a first face on an exhaust post  
9 flange, an intake port extending from said cylinder  
10 chamber to a second face on an intake port flange,  
11 fastener openings in said first and second faces, a foot  
12 flange having an as-cast mounting surface at another end  
13 of said cylinder chamber, and having as-cast fastening  
14 apertures openings in said foot flange, wherein said as-  
15 cast spark-plug aperture is closed at one end by a thin  
16 web;

17 machining said cylinder wall to a predetermined  
18 tolerance;

19 removing said thin web that closes one end of said  
20 as-cast spark-plug aperture;

21 tapping said spark plug aperture;

22 casting a crankcase having a crank chamber, a



23 crankcase connecting flange defining an opening to said  
24 crank chamber, said crankcase connecting flange having an  
25 as-cast flange mounting surface, and having first and  
26 second fastener openings cast into said as-cast flange  
27 mounting surface;

28 positioning the as-cast mounting surface of said  
29 cylinder head foot flange in face-to-face contact with  
30 the as-cast flange mounting surface of said crankcase so  
31 that the as-cast fastening ~~apertures~~ openings in the  
32 cylinder head foot flange are in axial alignment with the  
33 first and second fastener openings of said crankcase  
34 flange mounting surface; and

35 fastening said cylinder head to said crankcase by  
36 threading said openings and apertures with self-threading  
37 fasteners.

Claim 26 (Canceled)

1 Claim 27 (Currently amended): A method of  
2 manufacturing a cylinder head ~~according to claim 25, for~~  
3 a small engine comprising the steps of  
4 casting a cylinder head having an as-cast cylinder  
5 chamber defined by a cylinder wall, an as-cast spark plug  
6 aperture communicating with one end of said cylinder  
7 chamber, cooling fins, an exhaust port extending from the

8 cylinder chamber to a first face on an exhaust post  
9 flange, an intake port extending from said cylinder  
10 chamber to a second face on an intake port flange,  
11 fastener openings in said first and second faces, a foot  
12 flange having an as-cast mounting surface at another end  
13 of said cylinder chamber, and having as-cast fastening  
14 openings in said foot flange, wherein said exhaust port  
15 aperture and said intake aperture are closed by thin webs  
16 forming portions of said as-cast cylinder chambers;  
17 machining said cylinder wall to a predetermined  
18 tolerance;  
19 ~~and wherein said thin webs are removed removing said~~  
20 ~~thin webs~~ when said cylinder wall is machined;  
21 tapping said spark plug aperture;  
22 casting a crankcase having a crank chamber, a  
23 crankcase connecting flange defining an opening to said  
24 crank chamber, said crankcase connecting flange having an  
25 as-cast flange mounting surface, and having first and  
26 second fastener openings cast into said as-cast flange  
27 mounting surface;  
28 positioning the as-cast mounting surface of said  
29 cylinder head foot flange in face-to-face contact with  
30 the as-cast flange mounting surface of said crankcase so  
31 that the as-cast fastening openings in the cylinder head  
32 foot flange are in axial alignment with the first and

33     second fastener openings of said crankcase flange  
34     mounting surface; and  
35             fastening said cylinder head to said crankcase by  
36     threading said openings and apertures with self-threading  
37     fasteners.

38             Claim 28 (Original): A method of manufacturing a  
39     cylinder head according to claim 25, wherein the flatness  
40     of the as-cast mounting surface of said foot flange is  
41     0.006 inch over its entire surface.

1             Claim 29 (Original): A method of manufacturing a  
2     cylinder head according to claim 25, wherein said as-cast  
3     fastening openings in said foot flange are cast to a  
4     perpendicularity of 0.002 inch with respect to the foot  
5     flange mounting surface.

1             Claim 30 (Original): A method of manufacturing a  
2     cylinder head according to claim 25, wherein said as-cast  
3     fastening openings in said foot flange are cast to within  
4     0.006 inch of a true positional location on said foot  
5     flange.

1             Claim 31 (Original): A method of manufacturing a  
2     cylinder head according to claim 25, wherein apertures

3 are cast in said fins, said apertures being axially  
4 aligned with the fastening apertures in said foot flange.

1 Claim 32 (Original): A method of manufacturing a  
2 cylinder head according to claim 25, wherein apertures  
3 are machined in said fins, said apertures being axially  
4 aligned with the fastening apertures in said foot flange.

1 Claim 33 (Original): A method of manufacturing a  
2 crankcase according to claim 25, wherein the flatness of  
3 the as-cast flange mounting surface is 0.006 inch over  
4 its entire surface.

5 Claim 34 (Original): A method of manufacturing a  
6 crankcase according to claim 25, wherein said first and  
7 second fastener openings are cast into said surface to a  
8 perpendicularity of 0.002 inch with respect to said  
9 surface.

1 Claim 35 (Original): A method of manufacturing a  
2 crankcase according to claim 25, wherein first and second  
3 fastener openings are cast to within 0.006 inch of a true  
4 positional location on said surface.

1 Claim 36 (Original): A method of manufacturing a

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2        crankcase according to claim 25, wherein an O-ring groove  
3        is cast into said surface to surround said opening, and  
4        wherein an O-ring is inserted into said groove.